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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/857,572		John P. O'Brien	CL-1330	4982

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Wilmington, DE 19898

EXAMINER

WHITE, EVERETT NMN

ART UNIT	PAPER NUMBER
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1623

DATE MAILED: 08/22/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/857,572

Applicant(s)

O'BRIEN, JOHN P.

Examiner

EVERETT WHITE

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on ____.
- 2a) ☐ This action is FINAL. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-18 is/are pending in the application.
- 4a) Of the above claim(s) ____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) ____ is/are allowed.
- 6) ☒ Claim(s) 1-18 is/are rejected.
- 7) ☐ Claim(s) ____ is/are objected to.
- 8) ☐ Claim(s) ____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 05 June 2001 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on ____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. ____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) 3.
- 4) ☐ Interview Summary (PTO-413) Paper No(s) ____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other:

DETAILED ACTION

Claim Rejections - 35 USC § 112

1. The following is a quotation of the second paragraph of 35 U.S.C. 112:
The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.
2. Claims 14-18 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claim 14 is incomplete since the claim does not clearly state that the hexose units are in the liquid crystalline solution. To overcome this rejection Claim 14 may be changed to read - - A liquid crystalline solution, comprising: hexose units and an amount of solvent sufficient to form liquid crystals of a polymer comprising hexose units wherein... - -. Claims 15-18 are rejected since these claims are dependent from Claim 14.

Claim Rejections - 35 USC § 102

3. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless -

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

4. Claims 1-4 are rejected under 35 U.S.C. 102(b) as being anticipated by Shibata et al (US Patent No. 4,830,752).

Applicants claim a polysaccharide fiber, comprising: a polymer comprising hexose units wherein at least 50% of the hexose units are linked via an $\alpha(1\rightarrow3)$ glycoside linkage, said polymer having a number average degree of polymerization of at least 100. Additional limitations in the dependent claims include the polymer being poly- $\alpha(1\rightarrow3)$ -D-glucose and the fiber having a tensile strength of at least 1 gram per denier.

The Shibata et al patent discloses α -1,3-glucans (see structure at bottom of column 1) and discloses the degree of polymerization of the polysaccharides ranging from 5 to 500 (see column 2, lines 45-47). See column 3, lines 29 and 30, wherein Shibata et al discloses the glucan agents being spun into fiber. The tensile strength of at least 1 gram per denier set forth in instant Claim 4 is an inherent property of the α -1,3-glucans of the Shibata et al patent since products of identical chemical composition cannot have mutually exclusive properties. A chemical composition and its properties are inseparable. Therefore, if the prior art teaches the identical chemical structure, the properties applicant discloses and/or claims are necessarily present. *In re Spada* 15 USPQ 2d 1655, 1658 (Fed. Cir. 1990). See MPEP 2112.01. The above description of the α -1,3-glucans of the Shibata et al patent anticipates the polysaccharide fiber of the instant claims, including the polymer as poly- α -(1 \rightarrow 3) glucose having a degree of polymerization of at least 100.

5. Claims 14-18 are rejected under 35 U.S.C. 102(b) as being anticipated by Shibata et al (US Patent No. 4,830,752).

Applicants claim a liquid crystalline solution, comprising: a solvent and an amount sufficient to form liquid crystals of a polymer comprising hexose units wherein at least 50% of the hexose units are linked via an α (1 \rightarrow 3) glycoside linkage. Additional limitations in the dependent claims include the polymer being poly- α (1 \rightarrow 3)-D-glucose acetate; the solvent selected from a group that include an organic acid and organic halide; and the liquid crystalline solution having an amount of polymer that provides a solids content of at least 10%.

The Shibata et al patent discloses 1.3 g of α -1,3-glucan triacetate dissolved in a mixture of 9 ml of dichloromethane, 3 ml of acetic acid, and 4 ml of acetic anhydride to which was added 0.05 ml of 7% perchloric acid (see SYNTHESIS EXAMPLE 3 in column 8). The acetic acid and dichloromethane recited in the Synthesis Example 3 of the Shibata et al anticipates the organic acid and organic halide set forth in instant Claim 17. The 1.3 g of α -1,3-glucan triacetate anticipate the solids content of at least 10% provided by the polymer in instant Claim 18. The above described α -1,3-glucan

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triacetate mixture of the Shibata et al patent anticipates the liquid crystalline solution of instant Claims 14-18.

Claim Rejections - 35 USC § 103

6. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

7. Claims 5-13 are rejected under 35 U.S.C. 103(a) as being unpatentable over Shibata et al (US Patent No. 4,830,752).

Applicants claim a process for producing a polysaccharide fiber, comprising the steps of: dissolving a sufficient amount of a polymer comprising hexose units wherein at least 50% of the hexose units are linked via an $\alpha(1\rightarrow3)$ glycoside linkage in a solvent or in a mixture comprising a solvent to form a liquid crystalline solution; and spinning a polysaccharide fiber from said liquid crystalline solution. Additional limitations in the dependent claims include the polymer being poly- $\alpha(1\rightarrow3)$ -D-glucose acetate; further comprising contacting the polysaccharide fiber with an excess of a saponification or hydrolysis medium to form a regenerated polysaccharide fiber; the solvent being selected from a group that include an organic acid and an organic halide; and the liquid crystalline solution having an amount of polymer that provides a solids content of at least 10% or a range from 20% to about 35%.

The Shibata et al patent discloses a procedure for the application of α -1,3-glucans as a resolving agent to liquid chromatography, wherein use is made of several methods described in the 3rd full paragraph of column 3. The methods described by Shibata et al include one in which the agent in the form of powder is packed in a column, and another method described by the Shibata et al patent is one in which the agent is spun into fiber and a bundle of the fiber is used as a column. This latter method shows that the preparation of an α -1,3-glucan fiber using a spinning procedure is well known in the art. With regard to the procedure set forth in instant Claim 10 further comprising contacting the polysaccharide fiber with an excess of a saponification or hydrolysis medium to form a regenerated polysaccharide fiber, the Shibata et al patent shows that such a procedure is well known in the art. See the procedure in Synthesis Example 4 (see column 9), wherein hydrazine hydrate is added to curdlan triacetate suspended in 2-propanol and kept at 70°C for 4 hours and a half, which resulted in curdlan (a 1,3-glucan), which embraces the procedure of instant Claim 10. The instantly claimed invention differs from the Shibata et al patent's invention by claiming that the polysaccharide fiber is spun from a liquid crystalline solution, wherein the Shibata et al does not described the solution from which the α -1,3-glucan is obtained. In Example 2 (see column 8), the Shibata et al patent describes an α -1,3-glucan solution wherein the α -1,3-glucan triacetate is dissolved in a mixture of 8.4 ml of dichloromethane and 0.46 ml of methanol, which is used in the preparation of a powdery supported resolving agent. The combination of the α -1,3-glucan triacetate with the dichloromethane embraces the liquid crystalline solution of the instant claims wherein the solvent is an organic halide. Since the Shibata et al patent teaches the application of α -1,3-glucan as a resolving agent in powdery form and as a fiber, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the procedure set forth in Example 2 of the Shibata et al patent for preparing a powdery resolving agent by subjecting the α -1,3-glucan triacetate solution in Example 2 to a spinning procedure to produce a fiber in view of the recognition in the art, as evidenced by the Shibata et al patent, that α -1,3-glucan as a fiber is effective in liquid chromatography for resolving a compound or its optical isomers.

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Summary

8. All the claims are rejected.

Examiner's Telephone Number, Fax Number, and Other Information

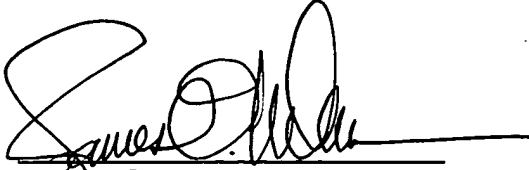
9. For 24 hour access to patent application information 7 days per week, or for filing applications, please visit our website at www.uspto.gov and click on the button "Patent Electronic Business Center" for more information.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Everett White whose telephone number is (703) 308-4621. The examiner can normally be reached on Monday-Friday from 9:30 AM to 6:00 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, James O. Wilson, can be reached on (703) 308-4624. The fax phone number for this Group is (703) 308-4556.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the Group receptionist whose telephone number is (703) 308-1235.


E. White


James O. Wilson
Supervisory Primary Examiner
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